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[Grass and Forage Plant Investigations.]

NEW OR LITTLE KNOWN MEXICAN GRASSES.

Nearly all the grasses enumerated in this circular were collected by Mr. C. G. Pringle in 1899. While the collection is a small one, it is remarkable for containing several species of *Panicum* of the *heterophyllae*, or so-called dichotomous, group which have not before been represented in Mr. Pringle's *Plantæ Mexicanæ*.

ISCHÆMUM LATIFOLIUM Kunth. Rev. Gram. 1:168. 1835.

Under the spray of the Cascade in the Barranca of Texola near Jalapa, altitude 1,100 m. (3,500 feet), April 30. C. G. Pringle, No. 8106. 1899.

PASPALUM CANDIDUM Kunth. Mem. Mus. Par. 2:68. 1803. (See Kew Index.)

Barranca of Texola near Jalapa, state of Vera Cruz, altitude 1,100 m. (3,500 feet), April 30. C. G. Pringle, No. 7884. 1899.

PANICUM PIOSUM Sw. var. **MACRANTHUM** var. nov.

Secondary axes or branches of the panicle (longer lower ones) 3.5 cm. long, pilose, with papillate hairs about 2 mm. long. Spikelets 2.2 mm. long, the outer glumes strongly scabrous on the keel near the apex, as is the fruiting glume and palea.

Swamps near Jalapa, State of Vera Cruz, altitude 1,230 m., May 21. C. G. Pringle, No. 8195. 1899.

PANICUM LAXIFLORUM Lam. Encycl. 4:748. 1797. (*P. jalapense* Kth. ?)

Low, densely cespitose perennial, 1.5–3 dm. high, with crowded, lanceolate, acute, pilose leaves and spreading, ovate panicles 4–5 cm. long. Culms much branched near the base, glabrous. Nodes bearded with spreading hairs. Sheaths pilose with soft, spreading or reflexed hairs. Ligule a dense fringe of hairs about 1 mm. long. Leaves lanceolate, acute, 3–6 cm. long, 6–10 mm. wide, pilose on both surfaces with soft hairs, ciliate on the margins with long, spreading, papillate hairs. Axis of the panicle glabrous or pubescent. Spikelets oblong, obtuse, 2 mm. long, first glume broadly obtuse, about one-third the length of the spikelet, 3-nerved, the second and third glumes prominently 7-nerved, pubescent with short spreading hairs between the nerves.

Gravelly banks near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet), March 29. C. G. Pringle, No. 8083. 1899.

Nearly identical with the grass from the Southern States which has been referred to *P. laxiflorum* Lam.

PANICUM INFLATUM Scribn. & Smith. Circular 16, Div. Agros. 5, July, 1899.

Gravelly banks near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet). Date not given. C. G. Pringle, No. 7883. 1899.

PANICUM VISCIDELLUM Scribn., sp. n.

A slender, ascending or erect, finally branching perennial, 6–10 dm. high, with numerous, bearded nodes, pubescent internodes, pubescent sheaths, lanceolate, acute, pubescent leaves, and ovate, exserted panicles 5–7 cm. long. Leaves 5–8 cm. long, 1–2 cm. broad, cordate-clasping at the base; ligule pilose. Panicle branches somewhat viscid, the lower ones 2.5–3 cm. long. Spikelets 1.8 mm. long, obovate, obtuse, or subacute, the 7-nerved second and third glumes glabrous or with a few scattering hairs.

Gravelly banks near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet).

C. G. Pringle, No. 8089. 1899. In thickets near Mirador, October. Liebmamn, No. 323. 1841.

Related to *P. viscidum*, but stems much more slender, leaves shorter and less rigid, panicles smaller, as are also the spikelets, which are nearly smooth. Fournier in his enumeration of the grasses of Mexico refers this grass to *P. commelinæfolium* Rudge, and cites *P. multiflorum* Ell. and *P. microcarpon* "Michx." as synonyms. I have not Rudge's work, "Plantæ Guianæ," in which *P. commelinæfolium* is illustrated, and upon which illustration Fournier based his determination of Liebmamn's plant, but our grass is certainly not *P. multiflorum* Ell. (*P. polyanthes* Schultes), nor does it agree with available descriptions of *P. commelinæfolium*. *P. microcarpon* Ell., Sk. Bot. S. C. & Ga., p. 127, not Muhl., is the grass now usually referred to *P. barbulatum* Mx.

PANICUM MULTIRAMEUM Scribn., sp. n.

A rather slender, tufted perennial, 20–30 cm. long, with the glabrous culms densely fasciculate-branched above, bearded nodes and glabrous or thinly pilose sheaths which are bearded at the throat; lower culm leaves 5–8 cm. long, those on the branches much shorter and narrower, sparingly ciliate near the base, pubescent beneath, minutely scabrous along the margins which are very narrowly cartilaginous. Panicles loosely flowered, 2–4 cm. long; spikelets about 2 mm. long, obtuse, and 7-nerved, the second and third glumes thinly pubescent, the fourth glume subacute; the broadly obtuse; first glume one-third to nearly one-half as long as the spikelet.

Gravelly hills near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet).

C. G. Pringle 7882, 1899. Orizaba, State of Vera Cruz, February 17. Jared G. Smith, No. 593. 1892.

Allied to *Panicum ciliosum* Nash but smaller, nodes more distinctly bearded and leaves less ciliate.

PANICUM ALBOMACULATUM Scribn., sp. n.

A rather slender, erect, sparingly branched perennial, 6–8 dm. high, with striate sheaths, short, ciliate ligules and spreading panicles 12–16 cm. long. Nodes glabrous, the overlapping margins of the sheaths very densely ciliate or sub-villous. Leaf-blade 7–12 cm. long, 5–10 mm. wide (when dry), very acute, rounded at the somewhat clasping base, scabrous on the nerves below, glabrous above, sharply serrulate scabrous on the narrowly cartilaginous margins which are ciliate near the base. Axis and branches of the panicle glabrous, the lower longer branches 8–10 cm. long. Spikelets ovate, obtuse, 2.5 mm. long; first glume obtuse, 1-nerved, sub-remote, clasping the pedicel, the second and third glumes 7-nerved, thinly pubescent with short hairs, about equaling the smooth and shining fourth glume; the third glume has a thin, short palea. The exposed portion of the culm and sheaths purplish, the latter (in the type) white-spotted with small, oblong spots or blotches.

Dry rocky hills, Patzcuaro, State of Michoacan, October 10. C. G. Pringle, No. 5203. 1892.

Allied to *Panicum scabriusculum* Ell. but readily distinguished by its larger spikelets, less densely flowered panicles, and distinctly cartilaginous, serrulate leaf margins. The plant throughout is more slender.

PANICUM POLYCAULON Nash. Torr. Bul. 24; 200, April, 1897. Low places, borders of swamps, Minatitlan, State of Vera Cruz, June 30. Jared G. Smith, No. 555. 1892.

MUHLENBERGIA SETARIOIDES Fourn., Mex. Pl. Enum. Gram. 84.

Under the spray of the Cascade in Barranca of Texola near Jalapa, State of Vera Cruz, altitude 1,100 m. (3,500 feet), April 30. C. G. Pringle, No. 8096. 1899.

MUHLENBERGIA ALAMOS-

ANA Vasey. Coul., Bot. Gaz. 16: 146, 1891. Mossy cliffs, Sierra de Tepixtlan near Cuernavaca, altitude 2,300 m. (7,500 feet), February 8 and March 14. C. G. Pringle, No. 6994. 1899.

SPOROBOLUS PILIFERUS

(Trin.) Kunth. Enum. Plant. 1: 211, 1833. Fields near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet). C. G. Pringle, No. 7881. 1899.

AVENA MICRANTHA sp. nov.
(Fig. 1.)

A very slender, densely cespitose, upright perennial, 2.5–3.5 dm. high, with soft leaves 6–15 cm. long, 1–2 mm. wide, ligules 5–6 mm. long, and loosely flowered simple panicles 5–7 cm. long. Sheaths glabrous; leaves pubescent above, smooth beneath, becoming involute when dry; branches of the panicle capillary, spread-

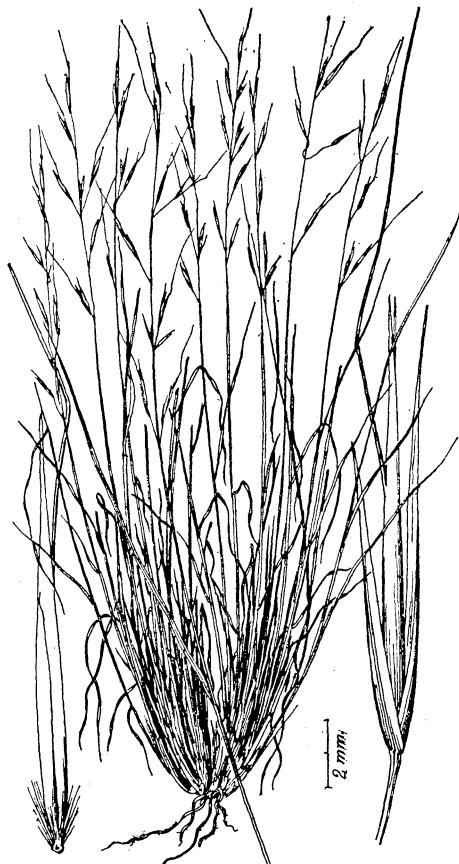


FIG. 1.—*Avena micrantha*. Scribn.

ing or ascending, 1–3-flowered, the longer lower branches 1–3 cm. long; empty glumes unequal, lanceolate, the first about 8 mm. long, 1-nerved, the second about as long as the flowering glume, 3-nerved near the base, thin membranous and abruptly pointed; flowering glume glabrous, 5-nerved, rounded on the back, 2-toothed at the apex, the teeth awn-like; callus rather densely bearded, hairs stiff, the longer ones 3–4 mm. long; awn arising below the apex of the flowering glume, slender, geniculate, twisted below the geniculation, about 17 mm. long; palea as long as the flowering glume, rather rigid, margins rounded, inflexed, apex subhyaline, the two nerves extending into subulate awn-like teeth.

Cool, mossy cliffs, Sierra de Tepixtlan near Cuernavaca, State of Morelos, altitude 2,300 m. (7,500 feet), February 5. C. F. Pringle, No. 8018. 1899.

AVENA STIPOIDES Scribn., sp. n.

A very slender, erect, somewhat wiry perennial 5-6 dm. high, with linear, erect leaves, and loosely few-flowered, simple panicles 5-10 cm. long. Sheaths shorter than the internodes, very minutely strigose-pubescent; ligule 5-8 mm. long, hyaline; leaves involute-setaceous, at least when dry, 1-2.5 mm. wide, 1-2 dm. long, scabrous. Spikelets about 12 mm. long exclusive of the awn; empty glumes unequal, thin, scarious, 1-nerved, acute, the first about 4 mm. long, the second 5.5 mm. long, flowering glume 11 mm. long, 5-nerved, slightly roughened on the nerves above, 2-toothed at the apex, teeth awn-like, awned on the back below the 2-toothed apex. Awn geniculate, twisted below, attached about two-thirds above the base, 12-14 mm. long. Palea equaling the glume, the two nerves extending into subulate, awnlike teeth. Callus hairs 1-2 mm. long.

Sierra de San Felipe, State of Oaxaca, altitude 3,130 m. (10,300 feet), September 19. C. G. Pringle, No. 4905. 1894. Distributed as *Muhlenbergia stipoides* Trin.

This grass is closely allied to *Avena micrantha*, No. 8018, but is at once distinguished by its shorter empty glumes.

The strictly one-flowered spikelets of this and the last species is a character which would lead one to place these grasses in the tribe *Agrostideæ*; but the densely hairy callus and rather rigid 5-nerved flowering glume which is deeply 2-toothed at the apex, and the dorsal, geniculate, and twisted awn formed by the union of three of the nerves suggest relationship with *Avena* as does the character of the empty glumes, and I have tentatively placed these species in that genus.

POA PRATENSIS L. Sp. Pl. 67. 1753.

Mountains near Jalapa, State of Vera Cruz, altitude 1,750 m. (5,700 feet), April-May. C. G. Pringle, No. 7880. 1899.

SITANION BREVIFOLIUM J. G. S. Bul. 18, Div. Agros. 17, June 24, 1899. Cerro Ventoso, above Pachuca, State of Hidalgo, altitude 2,600 m. (8,500 feet), August 18. C. G. Pringle, No. 6944, 1899.

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Approved:

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WASHINGTON, D. C., December 19, 1899.

